VC PØWER

E-POWERING CLEAN SEAS

Accelerating E-tug Deployment in S.E.A.

A leading developer of integrated green energy solutions for ports and the Shipping.

Introduction of VC Power

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Introduction

Our Vision

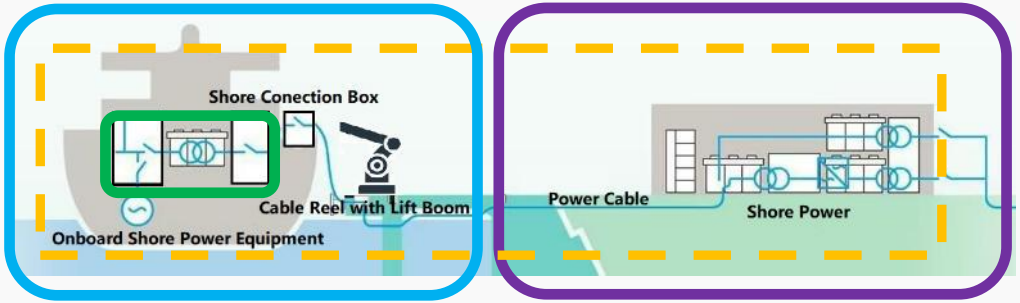
E-Powering Clean Seas

Our Mission

Driving the decarbonization of ship operations and ports through the deployment of electric vessels powered by smart energy technology and advanced infrastructure.

Full Specturm of Services

The VC Power aims to provide a holistic solution addressing EV vessels, high-end battery performance systems, reliable charging infrastructure which is supported by digital solution of battery health and battery charging infrastructure.



E-Vessel

- New building
- Retrofitting and conversion
- Operating and chartering

Battery-propulsion

- Permanent/portable battery system, with BMS
- Battery propulsion system tailored design

Infrastructure

- AC/DC Charging Infrastructure development / investment
- Shore-based battery storage

Digitalisation

- Battery health monitoring
- Charging performance monitoring

Project track records of battery solution

Delivery time: 2026.06
Length Overall: 40.0m
Bollard Pull: 60T
Battery Capacity: 7838kWh
Charging Station: 2000kW DC

5000HP E-tug

Delivery time: 2026.06
Length Overall: 40.0m
Bollard Pull: 60T
Battery Capacity: 5900kWh
Charging Station: 2000kW DC

5000HP E-tug

Delivery time: 2025.08
Length Overall: 38.5m
Bollard Pull: 61T
Battery Capacity: 7316kWh
Charging Station: 2000kW DC

5000HP E-tug

Delivery time: 2025.11
Length Overall: 37.6m
Bollard Pull: 51T
Battery Capacity: 3920kWh
Charging Station: 1250kW HVAC

4000HP E-tug

Project Track Samples

26m E-Tug, Indonesia

Delivery time: 2026.12
Length Overall: 26m
Bollard Pull: 30T
Battery Capacity: 5500kWh

42m E-Ferry, China

Delivery time: 2025.08
Length Overall: 42.0m
Capacity: 150P
Battery Capacity: 2512kWh

90m Hybrid DP2 OSV, Saudi Arabia

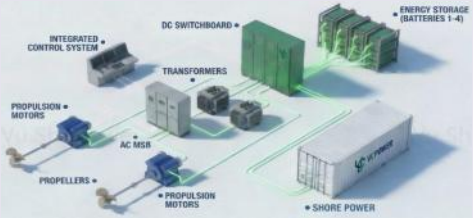
Delivery time: 2026.01
Length Overall: 90.0m
Battery Capacity: 900kWh

7999DWT Hybrid Bunker Tanker, Singapore

Delivery time: 2026.08
Length Overall: 115m
Battery Capacity: 2000kWh

Summarized Integrated Energy & Power Solutions

1. Battery Propulsion Technology



> 50 NB Vessels

Dedicated BMS that monitors battery conditions. Ensures optimized long-term performance for marine electric and hybrid operations

2. Containerized Battery Solutions

> 200 battery containers

Offer modular, scalable energy solution housed in standardized containers. Quick capacity scaling, simplified maintanence, seamless integration.

3. Charging Infrastructure

> 20 stations

Fast, reliable and scalable shore-charging potential. Supports AC & DC Charging. Modular design ensures short lead times, flexible commercial models (Pay-per-charge)

4. Digitalization Services

> 30mWh battery

Real-time visibility and intelligent control of vessel energy systems. Data monitoring, analytics, operational visibility and improved safety oversight capability.

Electrification Trends & Drivers

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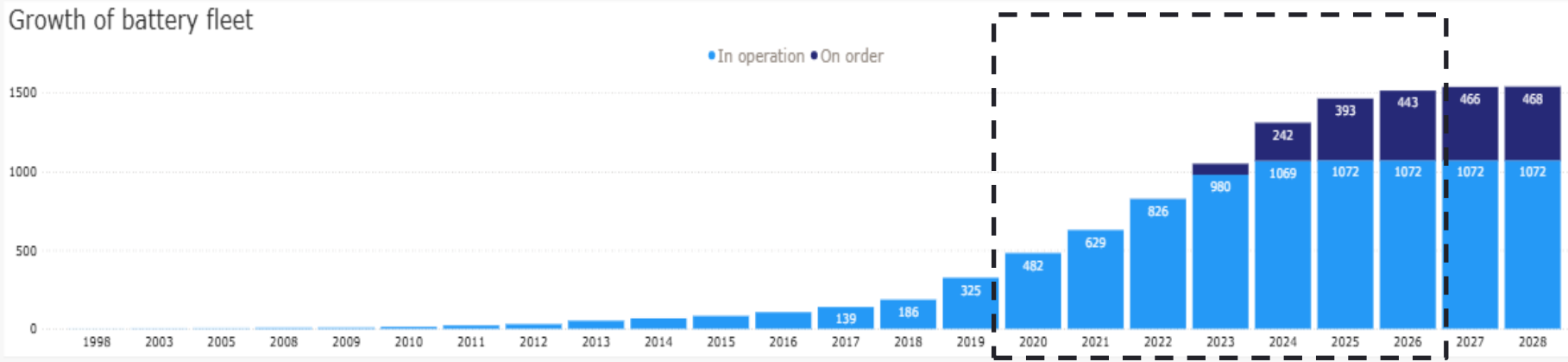
Global Electrification Trends

Fleet Electrification Data



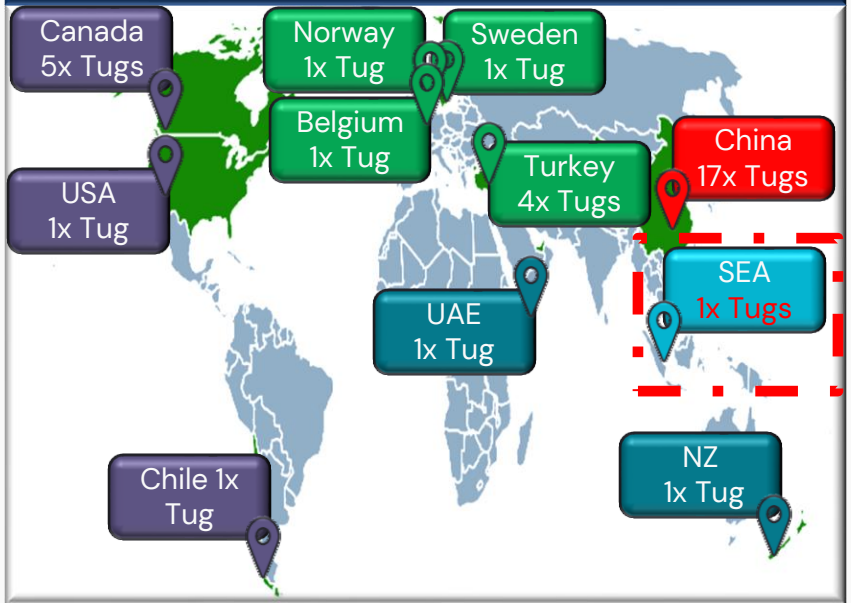
Data from: DNV Alternative Fuels Insight (AFI) for the shipping industry

Global Maritime Electrification is

ACCELERATING STEADILY

E-Tug Adoption

International E-Tug Count



Only 1 Tug Constructed in entire Southeast Asia Region:
Capitalize on E-Tug adoption opportunity

International Fleet

Americas (7)			*3x Haisea (Canada)* *2x SAAM (Canada)* *1x E-Wolf (USA)* *1x Trapanada (Chile)*
Europe (7)			*1x Volta 1 (Belgium)* *1x Svitzer Ingrid (Sweden)* *1x BB Electra (Norway)* *4x ElectRA (Turkey)*
China (17)			*4x Tianjin* *1x Bohai Wang* *4x Lianyungang* *1x Nanjing* *1x Fuzhou* *4x Xiamen* *1x Shenzhen* *1x Guangzhou*
Others (3)			*1x Bu Tinah (UAE)* *1x Sparky (New-Zealand)* *1x PaxOcean – EON (Singapore) – Delivered Mar 26*

Challenges and Solutions

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Challenges of E-tug Deployment

Perceived Barriers for Electrification Adoption

High Upfront Capex

- Capital Intensity for initial implementation of electrification systems
- Perception that E-Tugs more expensive than conventional tugs

Integration Risk

- Integration between battery and propulsion system.
- Interference during ship-shore charging

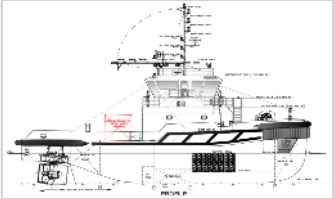
Operational Concerns

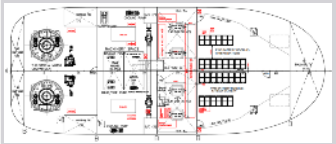
- Operational constrains
- Battery lifespan
- Safe operation
- Crew competence

Financial Strategies – Tackle CAPEX

Strategic approach required to reduce upfront CAPEX and enable the scalable commercial deployment.

Standardized Vessel Design	Financial Support	Battery Leasing Model
Standardized vessel designs from 40T-65T BP – Shorten lead times leveraging on off-the-shelf product and reduce CAPEX of NB.	Green financing: Provide sustainable financial support with special interest rates for electric vessels NB.	Utilize a Battery-Leasing scheme to enable upfront CAPEX to be significantly reduced. Converts large up-front cost to become predictable OPEX





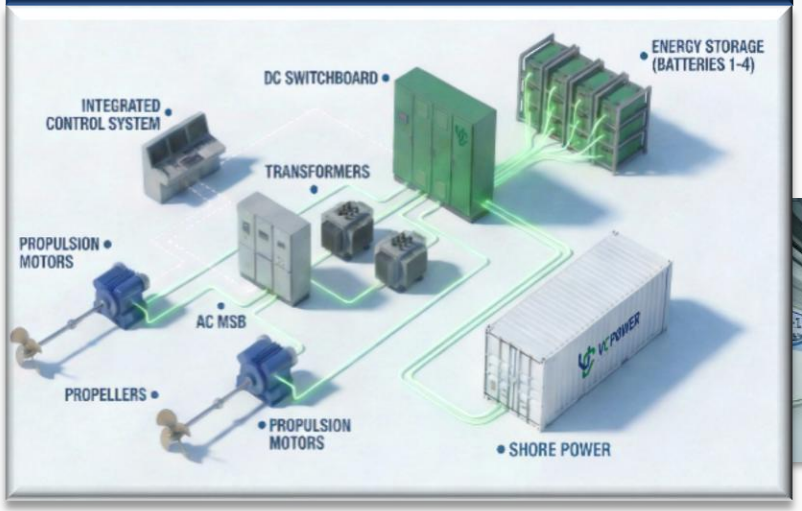
Solving Technical Integration Risk

To ensure seamless deployment of integrated systems, key risks are addressed through adoption of technically validated and globally proven solutions.

1 . Ship-Shore Charging Integration

Leveraging mature charging systems, along with proven safety and grid integration frameworks through turnkey package service.

2 . Battery Propulsion Integration Testing



End-to-end system integration and testing under a single platform to eliminate integration risks.

Addressing Operational Concerns

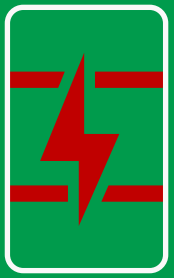
Battery system implementation introduces safety concerns, VC Power's responsibility is to address safety and operational risks.

Warranty Coverage

- Up to 10-year warranty on battery cells
- Lifecycle warranty service provided throughout contract period

Crew Training

- System familiarization during FAT
- System coaching during sea trial
- System handling training at vessel delivery
- Post-delivery training through remote guidance



Battery Degradation

- Optimization in charging profile and battery system cooling design
- Life extension of 5–10% through active power balancing enabled by advanced BMS
- Life extension of 5–10% through energy management using Battery AI applications

Battery Operational Safety

- Class-approved product and design redundancy
- Battery digital monitoring and alert system for real-time safety
- Predictive maintenance through battery AI applications

Techno-Commercial Assessment

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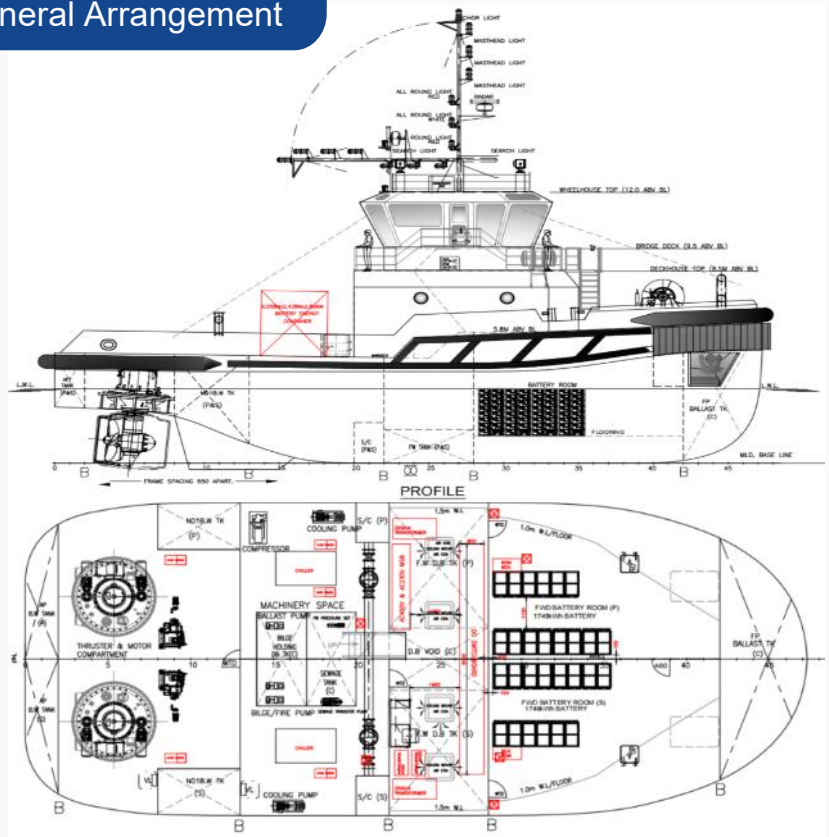
Case Study: Typical E-Tug

General Arrangement



Principal Particulars

Length Overall	26-32 m
Beam Moulded	approximately 11.00m
Depth Moulded	4.50m
Motor Power	2 x 500 to 2500 kW
Bollard Pull	20-70T
Max. Speed	11kn
Battery Capacity	2,000 – 10,000 kWh

Commercial Assessment (E-Tug)

Commercial Assessment of conventional driven tugs compared to electric counterparts, showing commercial feasibility of battery-electric tugs

Cost Item (USD - Million)	Conventional ASD 20T BP Harbour Tug	20T ASD E-Tug with 3000kWh Battery	Conventional ASD Tug (40T)	40T E-Tug with 6000kWh Battery
NB Cost (Reference only)	3	5.5	5	7
Annual FO and LO Cost	0.42	NA	0.81	NA
Annual Pure Electricity Fee	NA	0.12	NA	0.24
Annual Maintenance Fee	0.15	0.02	0.15	0.02
Battery Replacement over 30 Years	NA	0.68	NA	0.35
30 Yrs OPEX Cost	**17.07**	**4.8**	**28.73**	**9.01**
30 Yrs OPEX and CAPEX	**20.07**	**10.3**	**33.73**	**16.01**

Note: Annual Crew Cost Saving for One Oiler + Engineer would be 25,000 USD

Conclusion

Manufacturing E-Vessels are Technically & Commercially Viable

Technical Feasibility

- Advanced battery technology
- Proven integrated battery propulsion solution
- Mature ship-shore charging solution.

Commercial Viability

- Strategic approach to lowing CAPEX
- Maintaining low OPEX through minimal maintenance and reduce in fuel expenses

Through this sharing, we aim to collaborate with like-minded stakeholders to drive the decarbonization of the maritime industry and accelerate the transition towards a cleaner, more sustainable future.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Contact us via
Thank You